

**WHAT IS CLAIMED IS:**

1. A storage system comprising:  
a storage array containing a plurality of storage devices of at least three types and  
having a respective class hierarchy; and  
a controller coupled to the storage device hierarchy and capable of executing an  
hierarchical storage management capability that selectively controls access  
to the hierarchy of storage devices.
2. The storage device according to Claim 1 wherein:  
the storage array contains an hierarchy of storage devices of at least three types  
and having a respective performance hierarchy.
3. The storage device according to Claim 1 further comprising:  
the storage array contains an hierarchy of storage devices of at least three types  
and having a respective economic or cost hierarchy.
4. The storage device according to Claim 1 further comprising:  
a solid state cache and shared memory supplying storage for a level of hierarchical  
storage.
5. The storage device according to Claim 1 further comprising:  
relatively higher performance Small Computer Systems Interface (SCSI) and/or  
Fibre Channel (FC) storage devices supplying storage for a level of  
hierarchical storage.
6. The storage device according to Claim 1 further comprising:  
relatively lower performance Serial AT-attached (SATA) storage devices  
supplying storage for a level of hierarchical storage.
7. The storage device according to Claim 1 further comprising:  
a solid state cache and shared memory supplying storage for a first level of  
hierarchical storage;

relatively higher performance Small Computer Systems Interface (SCSI) and/or Fibre Channel (FC) storage devices supplying storage for a second level of hierarchical storage;

relatively lower performance Serial AT-attached (SATA) storage devices supplying storage for a level of hierarchical storage; and

a process executable in the controller allocates storage capacity of the SATA storage devices to low access customer data and to short-term and unpredictable storage usage.

8. The storage device according to Claim 7 further comprising:  
an hierarchical storage management controller for usage within a disk array utilizing Fibre Channel (FC) and SATA disk drives and that allocates SATA storage as uncommitted and unstructured storage.

9. The storage device according to Claim 7 further comprising:  
an hierarchical storage management controller for usage within a disk array utilizing Fibre Channel (FC) and SATA disk drives and that allocates SATA storage for intra-array and/or inter-array data transfers including logical unit (LUN) copies and snapshots.

10. A method of managing information storage in a storage system comprising:  
enclosing an hierarchy of storage devices of at least three types and having a respective class hierarchy within a storage array; and  
selectively controlling information access to the hierarchy of storage devices within the storage array.

11. The method according to Claim 10 further comprising:  
coupling an hierarchy of storage devices into the storage array including at least three types having a respective performance hierarchy.

12. The method according to Claim 10 further comprising:  
coupling an hierarchy of storage devices into the storage array including at least three types having a respective economic or cost hierarchy.

13. The method according to Claim 10 further comprising:  
combining an hierarchy of storage devices into the storage array including at least  
a volatile shared memory, a relatively higher performance non-volatile  
storage, and a relatively lower performance non-volatile storage.
14. The method according to Claim 10 further comprising:  
combining an hierarchy of storage devices into the storage array including at least  
a solid state cache and shared memory supplying storage for a first level of  
hierarchical storage, relatively higher performance Small Computer  
Systems Interface (SCSI) and/or Fibre Channel (FC) storage devices  
supplying storage for a second level of hierarchical storage, and relatively  
lower performance Serial AT-attached (SATA) storage devices supplying  
storage for a level of hierarchical storage.
15. The method according to Claim 14 further comprising:  
allocating storage capacity of the SATA storage devices to low access customer  
data and to short-term and unpredictable storage usage.
16. The method according to Claim 14 further comprising:  
allocating SATA storage as uncommitted and unstructured storage.
17. The method according to Claim 14 further comprising:  
allocating SATA storage for intra-array and/or inter-array data transfers including  
logical unit (LUN) copies and snapshots.
18. A storage system comprising:  
a disk array containing an hierarchy of storage disks of at least two types and  
having a respective class hierarchy; and  
a controller coupled to the disk array and capable of executing an hierarchical  
storage management capability that selectively controls access to the  
hierarchy of storage disks.

19. The storage system according to Claim 18 further comprising:  
a cache memory coupled to the controller and operable as an additional storage in  
the class hierarchy.
20. The storage system according to Claim 18 further comprising:  
an hierarchy of storage devices having a respective performance hierarchy.
21. The storage system according to Claim 18 further comprising:  
an hierarchy of storage devices having a respective economic or cost hierarchy.
22. The storage system according to Claim 18 further comprising:  
a cabinet enclosing the disk array and the controller.
23. The storage system according to Claim 18 further comprising:  
relatively higher performance Small Computer Systems Interface (SCSI) and/or  
Fibre Channel (FC) disks supplying storage for a first level of hierarchical  
storage;  
relatively lower performance Serial AT-attached (SATA) disks supplying storage  
for a level of hierarchical storage; and  
a process executable in the controller allocates storage capacity of the SATA disks  
to low access customer data and to short-term and unpredictable storage  
usage.
24. An article of manufacture comprising:  
a controller usable medium having a computable readable program code embodied  
therein for managing a storage system, the computable readable program  
code further comprising:  
a code capable of causing the controller to intercommunicate among an  
hierarchy of storage devices of at least three types and having a  
respective class hierarchy within a storage array; and  
a code capable of causing the controller to selectively control information  
access to the hierarchy of storage devices within the storage array.

25. A storage system comprising:  
means for coupling an hierarchy of storage devices of at least three types and  
having a respective class hierarchy within a storage array; and  
means for selectively controlling information access to the hierarchy of storage  
devices within the storage array.